Causal Effect of Caffeine on Heart Rate

using latin square design

Young Geun Kim
ygeunkim.github.io
2019711358, Department of Statistics

07 May, 2021

Abstract

After drinking coffee, one's heartbeat raises. This kind of change in metabolism might be responsible for caffeine. To confirm this, we conduct an experiment. Blocked by coffe-to-water ratio and drinking speed, we build 4×4 latin square design with caffeine intensity factor. For each cell, we measure heart rate using ECG app installed in Apple Watch (it gives average BPM).

Contents

References

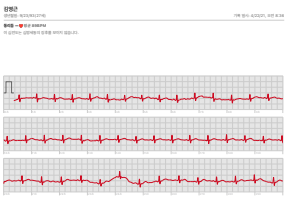
A Appendix

A.1 Codes

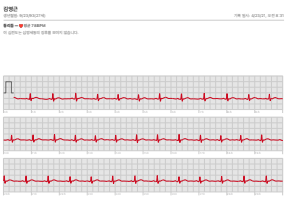
Package loading:

```
# tidyverse family--------------------
library(tidyverse)
# kable-------------------------------
library(knitr)
library(kableExtra)
# set seed for report -----------------
set.seed(1)
```

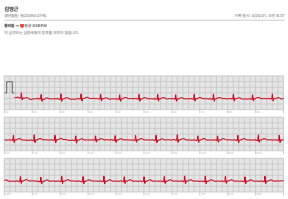
A.2 ECG Results



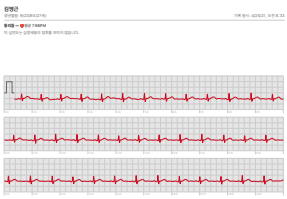
(a) (1,1),House blend: 89 BPM



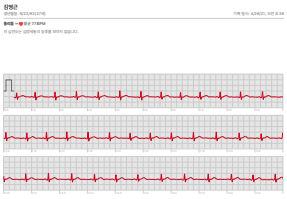
(b) (1,2),Water: 78 BPM



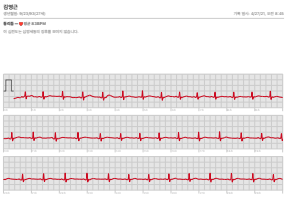
(c) (1,3),Sumatra: 83 BPM



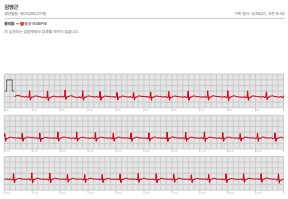
(d) (1,4),Decaf: 79 BPM



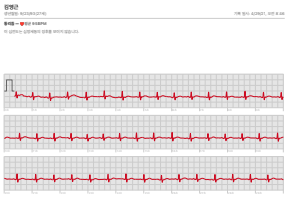
(e) (2,1),Water: 77 BPM



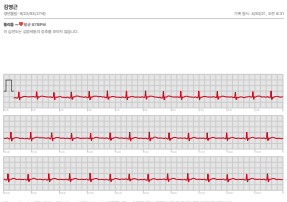
(f) (2,2),Sumatra: 83 BPM



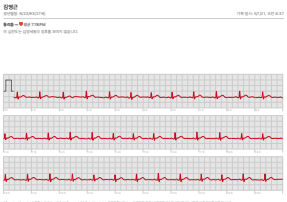
(g) (2,3),Decaf: 93 BPM



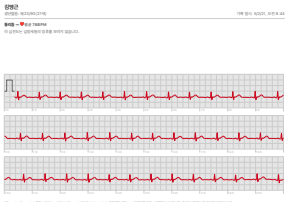
(h) (2,4),House blend: 95 BPM



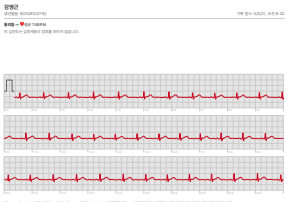
(i) (3,1),Sumatra: 87 BPM



(j) (3,2),Decaf: 77 BPM

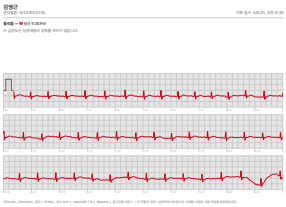


(k) (3,3),House blend: 78 BPM



(l) (3,4),Water: 74 BPM

(m) (4,1),Decaf: 77 BPM



(n) (4,2),House blend: 92 BPM

(o) (4,3),Water: 71 BPM

(p) (4,4),Sumatra: 76 BPM

Figure 1: Electrocardiogram after drinking Coffee